

promptly notified and all took immediate action looking to the protection of their floating property on the Kanawha, telegraphing the information to their people.

The maximum stage reached at Radford, Va., was 26.4 feet at 3:30 p. m. on the 22d. This was 12.4 feet over the danger line. A special on the same day from Hinton, W. Va., showed that by 6 p. m. the river had exceeded the danger line 4 feet and come to a stand 18.8 feet by 9 p. m., remaining at that stage until near midnight.

On the morning of the 23d the report from Charleston, W. Va., showed a stage of 36.6 feet, a rise of 29.7 feet in the past twenty-four hours. A crest of about 39 feet was forecast, and a maximum of 38.5 feet reached at 1 p. m. of the 23d. The river remained stationary at that stage until 3 p. m. of the same day.

On the 24th the Kanawha rise had again subsided and no serious effect was produced upon the Ohio River, the resulting crest stage at Cincinnati being 35.9 feet on the morning of the 26th. The local crest stage forecast several days previous was between 36 and 38 feet.

Mr. Arthur Roberts, special river observer at Radford, Va., reports, as follows: "Great damage was done to farmers all along New River; impossible to estimate the loss. The damage to the Norfolk and Western Railway Company, by bridges and tracks washing out, will probably amount to \$20,000."

Miss Vella V. Flanagan, special river observer at Hinton, W. Va., reports, as follows: "The official information was timely and of great benefit. It gave the people time to get out themselves and to pack up their household effects. There were five one-story houses taken entirely away and three others practically rendered worthless, part of one being taken away. Lumber and farming interests above this point also suffered severely."

Mr. J. W. Crider, special river observer at Charleston, W. Va., reports in part, as follows: "Several tipples and barges from farther up the river were swept away. What damage was done was principally to cellars and houses located in the lowlands. The public had a better warning of this rise than ever before. * * * I personally notified a number of firms here to get their goods out of their cellars to places of safety. We also kept the railroad officials posted, and the warning saved a good many bridges and trestles which otherwise would have been swept away. The warning was given them in time to weight the bridges, etc., down with loaded cars. The value of the warning can

hardly be estimated in dollars and cents, but had it not been given promptly thousands of dollars additional loss would have occurred. The United States Engineers in charge of the Kanawha River improvements, with their telephone service, spread the warning up and down the river to the various towns and mines."

It will be seen from these accounts that all the high waters were well anticipated by the Weather Bureau warnings. The flood forecasts were timely, and afforded another example of the great value of this branch of the service.

The Brazos River was somewhat higher during the month, particularly over the lower portion. The service on this river was improved during the month by the opening of a new special at Booth, Tex. On the Pacific coast the only item of interest was the annual rise of the Columbia River. It was in progress during the entire month, and at the close of the month the stages in the lower river were but a few feet below the danger lines. At Portland, Oreg., on the Willamette River, the back water caused a stage of 19.9 feet on the 31st, 4.9 feet above the danger line. Special river bulletins were issued daily from the Weather Bureau office at Portland during the flood, and a detailed report thereof will appear in the WEATHER REVIEW for June.

The highest and lowest water, mean stage, and monthly range at 137 river stations are given in Table VII. Hydrographs for typical points on seven principal rivers are shown on Chart V. The stations selected for charting are: Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport on the Red.—H. C. Frankenfield, *Forecast Official*.

CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following summaries relating to the general weather and crop conditions are furnished by the directors of the respective sections of the Climate and Crop Service of the Weather Bureau.

[Temperature is expressed in degrees Fahrenheit and precipitation in inches and hundredths.]

Alabama.—The mean temperature was 69.8°, or 1.4° below normal; the highest was 99°, at Bermuda on the 16th, and the lowest, 40°, at Opelika on the 27th. The average precipitation was 5.08, or 1.83 above normal; the greatest monthly amount, 9.34, occurred at Valley Head, and the least, 2.32, at Florence.

Several cool spells, especially a decided one during the latter part of the month, seriously retarded growth of late planted corn and cotton. Hailstorms quite frequent and in some places damaging.—F. P. Chaffee.

Arizona.—The mean temperature was 70.4°, or 2.2° below normal; the highest was 107°, at Mohawk Summit on the 6th, and the lowest, 22°, at Flagstaff on the 22d. The average precipitation was 0.44, or 0.09 above normal; the greatest monthly amount, 3.38, occurred at Fort Defiance, while none fell at a number of stations.

While the early ripening of wheat and barley has been retarded by an unusual amount of cloudiness and by temperature generally below the seasonal average, the conditions otherwise have been favorable for the filling of grain, and crops yielding more than average seem to be assured.—W. G. Burns.

Arkansas.—The mean temperature was 68.2°, or 1.8° below normal; the highest was 100°, at Jonesboro on the 2d, and the lowest, 31°, at Pond on the 26th. The average precipitation was 2.95, or 1.65 below normal; the greatest monthly amount, 7.85, occurred at Blanchard, and the least, 0.49, at Pond.

The drought continued during the first two weeks of the month and did considerable damage to all growing crops. The drought was broken on the 12th, and after that date good rains were generally well distributed throughout the State. Some corn and cotton had to be replanted. These crops are now coming up to fair to good stands and are being worked out. Cotton chopping progressing rapidly. Wheat and oats damaged by dry weather and insects. Rust has made its appearance in some wheat. Irish potatoes are generally good, but have been

slightly injured by bugs. The fruit prospects continue good, but in a few localities peaches, plums, and cherries are beginning to drop off.—E. B. Richards.

California.—The mean temperature was 62.0°, or 1.7° below normal; the highest was 108°, at Volcano on the 16-18th and 31st, and the lowest, 16°, at Bodie on the 1st. The average precipitation was 1.03, or 0.11 below normal; the greatest monthly amount, 3.87, occurred at Cuyamaca, while none fell at 5 stations.

Frequent and unusually heavy rains during the month materially improved the condition of wheat, rye, barley, and oats, benefited orchards and vineyards, and gave new life to pasturage. Hay was considerably damaged in some localities, but the yield will be heavy. The grain crop will equal and possibly exceed the average yield. Deciduous fruits are in better condition than expected a month ago.—Alexander G. McArdie.

Colorado.—The mean temperature was 55.5°, or 1.0° above normal; the highest was 92°, at Blaine on the 9th and at Delta on the 19th, and the lowest, 15°, at Durango on the 5th and 22d. The average precipitation was 2.34, or 0.42 above normal; the greatest monthly amount, 10.52, occurred at Alford, and the least, trace, at Hugo.

Weather conditions more favorable than usual for seeding, planting, germination, and stooling, but hardly ideal for the advancement of corn. Serious damage to crops in eastern part of Larimer County on the 20th-22d by heavy rains, flooding, and hail. Destructive hailstorms in localities of Las Animas County on the 11th and Huerfano County on the 27-29th. Some damage by frost on the 26th in eastern border counties.—F. H. Brandenburg.

Cuba.—The mean temperature was 78°; the highest was 100°, at Holguin, Santiago Province, on the 10th and 11th, and the lowest, 50°, at Rosario (Aguate), Havana Province, on the 1st, and Santa Clara, Santa Clara Province, on the 1st and 11th. The average precipitation was 9.03; the greatest monthly amount, 20.27, occurred at Matanzas, Matanzas Province, and the least, 1.99, at Manzanillo, Santiago Province.

The severe drought conditions which obtained throughout the island at the end of the first week, when in different portions of the island cisterns mostly were empty, wells running dry, springs failing, ponds dry, and stock water was scarce, and in southeast Puerto Principe some of the people did not have water with which to cook, were ameliorated over the greater portion of the western four provinces by abundant

rains during the second week, and over the remainder of the island during the third week. Abundant to excessive rains continued over the western four provinces during the fourth week, and generally were very beneficial, although some damage was done to crops in northeast Pinar del Rio, southwestern Havana, and southwestern Matanzas. Over the remainder of the island the rains of the fourth week were generally abundant and beneficial, except in southeastern Santiago, where they were insufficient, and did not admit of soil cultivation. The majority of sugar centrals had completed their grinding under normal conditions, except at Banaguises, where the excessive rainfalls caused the cessation of grinding, while 12,500 tons of available cane was still standing.—*W. B. Stockman.*

Florida.—The mean temperature was 75.1°, or 0.5° below normal; the highest was 98°, at Eustis on the 15th and at McAlpine and Quincy on the 24th, and the lowest, 43°, at Middleburg on the 28th. The average precipitation was 4.38, or 1.47 above normal; the greatest monthly amount, 10.42, occurred at Miami, and the least, 1.45, at Earnestville.

Farm work made fair progress during the month. The bulk of the cotton crop was chopped and corn was well cultivated. Precipitation was excessive over a large portion of the State. On lowlands some damage resulted to cotton and vegetables. Cane, cassava, and melons did well. Citrus fruits dropped considerably; small shipments of pineapples were made from the southern district.—*A. J. Mitchell.*

Georgia.—The mean temperature was 71.4°, or about normal; the highest was 99°, at Maury on the 24th, and the lowest, 40°, at Clayton on the 29th. The average precipitation was 5.71, or 2.49 above normal; the greatest monthly amount, 10.39, occurred at Dahlonega, and the least, 2.71, at Savannah.

The weather of the month was unfavorable to crops. The excessive rains of the latter portion prevented proper cultivation and vegetation became infested with weeds and foreign matter. The general situation at the close of the month was regarded as very discouraging.—*J. B. Marbury.*

Idaho.—The mean temperature was 57.1°, or 3.2° above normal; the highest was 99°, at Garnet on the 16th, and the lowest, 19°, at Soldier on the 20th. The average precipitation was 1.43, or 0.37 below normal; the greatest monthly amount, 3.80, occurred at Priest River, and the least, 0.28, at Idaho City.

The mean temperature for May was the highest on record. There were no severe storms, but the rapid melting of snow as the result of warm weather, caused considerable damage to bridges along several streams, especially the Wood River, where, at Star, one bridge was washed away.—*S. M. Blandford.*

Illinois.—The mean temperature was 61.7°, or 1.3° below normal; the highest was 94°, at St. John on the 1st, Ottawa on the 2d, Cisne, Mount Vernon, and New Brunside on the 3d, and the lowest, 29°, at Lanark on the 26th. The average precipitation was 1.96, or 2.12 below normal; the greatest monthly amount, 5.02, occurred at Sullivan, and the least, 0.45, at Coatsburg.

After the first few days the month was generally cool and the growth of vegetation was greatly retarded. A few frosts occurred, but the damage caused by them was slight. Dry weather caused some injury to crops over most of the State, though in a few localities the rainfall was sufficient.—*M. E. Blystone.*

Indiana.—The mean temperature was 60.7°, or 1.9° below normal; the highest was 95°, at Terre Haute on the 2d, and the lowest, 31°, at Salem, Cambridge, Richmond, and Ambrose on the 13th. The average precipitation was 2.54, or 1.43 below normal; the greatest monthly amount, 5.89, occurred at Huntington, and the least, 0.82, at Washington.

Warm, sunny weather at the beginning of May advanced all crops and farm work; trees and shrubs which were leafless at the close of April were green at the end of the first week of May. Wheat, rye, grass, clover, and timothy grew well; early-sown oats, barley, tobacco, and potatoes came up nicely; fruits, except apples, were in full bloom. Plowing progressed rapidly and corn planting begun. Cool weather and frequent light and badly distributed rains prevailed in the middle and latter parts of the month, retarding plowing and planting and the growth of crops. In the southern portion wheat was jointing, rye heading, and all the oats were sown. Near the end of the month heavy hailstorms damaged crops considerably in several localities; a number of sheep and calves were either killed or injured in Jackson County; wheat was heading; the injury by the fly was increasing; rye matured well; oats looked poor; tobacco was transplanted. Corn was not all planted; the early crop came up slowly, and cut worms did much damage. Late potato planting begun; early potatoes grew well. Tree fruits were very promising, but apples dropped badly; strawberries were ripe; blackberries were in bloom. Livestock was in good condition.—*C. F. R. Wapenhans.*

Iowa.—The mean temperature was 60.7°, or 1.0° above normal; the highest was 95°, at Clear Lake on the 2d and 17th, and the lowest, 28°, at Larrabee on the 12th. The average precipitation was 2.35, or 1.62 below normal; the greatest monthly amount, 4.57, occurred at Belle Plaine, and the least, 0.72, at Belknap.

Weather conditions quite variable, the first and third weeks being much warmer than usual, and the second and fourth weeks much colder; the average for the month being slightly above normal. De-

ficient rainfall materially affected the crops of oats, wheat, barley, and hay, which will not be fully recovered however favorable the weather in future. Corn was generally clean at close of month, though checked in growth and uneven in stand.—*John R. Sage.*

Kansas.—The mean temperature was 63.1°, or 1.2° below normal; the highest was 95°, at Ulysses on the 10th, and the lowest, 25°, at Achilles on the 26th. The average precipitation was 1.63, or 2.03 below normal; the greatest monthly amount, 4.12, occurred at Independence, and the least, 0.18, at Lebanon.

Cool, dry month. Wheat headed and begun blooming, some local injury by fly and smut. Apple trees bloomed. Corn came up, good stands in southern counties, with medium or poor stands in many other counties, and much replanting to be done, being cultivated, growth retarded by cool weather. Oats poor stand. Cankerworm began injuring some orchards.—*T. B. Jennings.*

Kentucky.—The mean temperature was 63.7°, or 2.1° below normal; the highest was 97°, at Hopkinsville on the 5th, and the lowest, 34°, at Loretto on the 14th. The average precipitation was 2.65, or 1.31 below normal; the greatest monthly amount, 5.11, occurred at Warfield, and the least, 1.21, at Centertown.

The first week was warm and quite favorable to growing crops and farm work, but the remainder of the month was too cool and there was a lack of sunshine. Light frost occurred at some stations on the 26th, but no serious damage resulted. These unfavorable conditions checked the growth of all crops and made the season very backward. At the close of the month not more than half the tobacco was set out and the plants were very small. Corn and gardens were very late. Wheat, oats, and rye were in fair condition. Apples dropping badly, but other fruits were promising. Cutworms were numerous during the month.—*H. B. Hersey.*

Louisiana.—The mean temperature was 72.3°, or 1.9° below normal; the highest was 95°, at Covington on the 1st and at Schriever on the 15th, and the lowest, 41°, at Oxford on the 27th and at Robeline on the 28th. The average precipitation was 2.08, or 1.04 below normal; the greatest monthly amount, 7.20, occurred at Lake Providence, and the least, trace, at Opelousas.

Droughty conditions prevailed in the central, southern and southwestern portions of the State throughout the month, and all crops suffered more or less in consequence. The bad effects of the long period of dry weather were minimized, however, by active and thorough cultivation of the crops that were up. A considerable acreage of cotton, rice, and cow peas planted during the month had not yet come up at its close. Sweet potato planting was delayed and all crops were about two weeks late. Rain was fairly plentiful in the northern parishes, and exceeded crop needs in the northeast corner of the State.—*W. T. Blythe.*

Maryland and Delaware.—The mean temperature was 61.3°, or 1.7° below normal; the highest was 95°, at Boettcherville, Md., on the 25th, and the lowest, 25°, at Deepark, Md., on the 4th. The average precipitation was 4.47, or 0.52 above normal; the greatest monthly amount, 9.56, occurred at Frostburg, Md., and the least, 2.17, at Distributing Reservoir, D. C.

Large number of rainy days and surplus rainfall hindered farm work to some extent, delaying corn planting especially. The deficiency in temperature and sunning retarded growth at times. The month as a whole, however, was favorable to crops, and at its close winter grain, corn, potatoes, tobacco, truck, and fruit were promising; hay crop promises to be below the average. Strawberries and June peas were yielding well at the close of the month.—*Olin L. Fassig.*

Michigan.—The mean temperature was 54.2°, or 0.5° below normal; the highest was 90°, at Ewen on the 8th, and the lowest, 18°, at Gaylord on the 15th. The average precipitation was 2.47, or 0.70 below normal; the greatest monthly amount, 5.65, occurred at Fitchburg, and the least, 0.40, at Ontonagon.

May was generally an unfavorable month for much crop growth and especially for the germination of spring seeding. There were no wide departures from normal temperature or normal precipitation, but the month was practically devoid of any hot spells, which are so valuable in seed germination, while the nights were almost uniformly cool. Corn has suffered most, some seed rotting and much of it taking from ten to fourteen days to germinate.—*C. F. Schneider.*

Minnesota.—The mean temperature was 58.2°, or 2.0° above normal; the highest was 95°, at Ada on the 1st, and the lowest, 23°, at Newfolden, on the 11th. The average precipitation was 1.41, or 1.25 below normal; the greatest monthly amount, 4.97, occurred at Bemidji, and the least, trace, at Thief River Falls.

There were periods of warm weather on the 1st, 2d, 16th, 17th, and 18th, and periods of cool weather on the 11th, 12th, 13th, 24th, and 25th, with freezing temperatures and frosts, which, on the latter dates, affected corn, gardens, and barley in exposed places, but without permanent injury. The cool weather was beneficial to spring wheat and oats, but it retarded the growth of corn. Dry weather in northern counties permitted seeding on lands too wet to plow last fall and wet early this season. Early sown grains have not been in want of rain, though the surface soil was very dry at times, but late sown grains and flax were slow in germinating till the rains of the 22d and 23d.—*T. S. Outram.*

Mississippi.—The mean temperature was 70.7°, or 2.1° below normal; the highest was 95°, at Brookhaven on the 11th, Edwards on the 16th, and Aberdeen and Agricultural College on the 24th, and the lowest, 38°, at Aberdeen on the 27th. The average precipitation was 4.09, or 0.83 above normal; the greatest monthly amount, 12.20, occurred at Edwards, and the least, 0.48, at Bay St. Louis.

The deficiency in rainfall during the last of April and first half of May caused the oat crop to make a light yield. The unusually low temperature during the last decade of the month retarded the growth of all crops, and in some sections was quite injurious to cotton.—*W. S. Belden.*

Missouri.—The mean temperature was 63.7°, or 1.3° below normal; the highest was 98°, at Unionville on the 18th, and the lowest, 30°, at Edwards and Montreal on the 26th. The average precipitation was 1.48, or 3.80 below normal, the least precipitation for any May during the past fifteen years; the greatest monthly amount, 3.77, occurred at St. Charles, and the least, 0.19, at Birchtree.

At only a few scattered stations did the precipitation of the month exceed 50 per cent of the normal amount, while over a large part of the State it was less than 25 per cent. At St. Joseph, Mexico, Shelbyville, Hermann, Boonville, Glasgow, Sedalia, and Ironton, where observations have been continued for more than twenty years, and also at Miami, where they cover a period of fifty-three years, it was the driest May on record. Over portions of the central and southern sections hardly enough rain fell at any one time between April 17 and the close of May to thoroughly lay the dust. In some counties corn planting could not be finished, the ground being too hard to plow. Corn came up poorly and much replanting was necessary. Except in portions of the northern sections, all growing crops suffered more or less from lack of moisture, and in many counties wheat, oats, and meadows were greatly injured.—*A. E. Hackett.*

Montana.—The mean temperature was 58.8°, or 4.3° above normal; the highest was 104°, at Poplar on the 17th, and the lowest, 17°, at Glenwood on the 3d, and at Adel and Kipp on the 10th. The average precipitation was 2.98, or 0.66 above normal; the greatest monthly amount, 8.48, occurred at St. Peters, and the least, trace, at Glendive and Wibaux.

The precipitation over central Montana has been exceptionally large and about normal in the west portion, but there has been a deficiency in the east portion, which has made the prospect for a hay crop very poor.—*E. J. Glass.*

Nebraska.—The mean temperature was 60.5°, or 1.0° above normal; the highest was 96°, at Lynch on the 1st, and the lowest, 26°, at Lynch on the 12th. The average precipitation was 1.86, or 1.63 below normal; the greatest monthly amount, 5.29, occurred at Dawson, and the least, 0.10, at Wauneta.

The deficiency in rainfall affected winter wheat and oats unfavorably, especially in the south-western portion of the State, where considerable damage resulted. Oats are thin stand. Corn was planted in good season under favorable conditions, but the low temperature the last half of the month has been unfavorable to germination and growth, and corn is coming up unevenly, but generally the stand is good.—*G. A. Loveland.*

Nevada.—The mean temperature was 56.2°, or 0.3° below normal; the highest was 94°, at Palisade on the 15th, and the lowest, 19°, at Palmetto on the 2d. The average precipitation was 0.86, or 0.81 below normal; the greatest monthly amount, 3.79, occurred at Palmetto, while none fell at Battle Mountain.

Cold nights during the month retarded the growth of vegetation, especially alfalfa and garden truck, which were very backward at the close of the month. There were no injurious frosts and the prospects for plenty of fruit were very promising.—*J. H. Smith.*

New England.—The mean temperature was 54.6°, or 0.7° below normal; the highest was 91°, at Plymouth, N. H., on the 22d, and the lowest, 24°, at Grafton, N. H., on the 6th. The average precipitation was 5.83, or 2.03 above normal; the greatest monthly amount, 10.49, occurred at Provincetown, Mass., and the least, 0.75, at Kineo, Me.

No destructive or severe storms have occurred during the month. The precipitation has been heavy, and at many stations has been greater than that of any other May on record. No extremely low temperatures have occurred, but there has been a marked absence of warm days, and the average maxima have been low. As a result of the excessive precipitation and cloudiness the ground has been saturated with water, delaying farm work about two weeks later than the usual season. Grass has made a rapid and luxuriant growth, but other crops are backward.—*J. W. Smith.*

New Jersey.—The mean temperature was 58.6°, or 2.0° below normal; the highest was 90°, at Indian Mills on the 24th, and the lowest, 29°, at Charlotteburg on the 6th. The average precipitation was 5.60, or 1.10 above normal; the greatest monthly amount, 8.13, occurred at River Vale, and the least, 3.10, at Freesburg.

Excessively wet, cool, cloudy weather has prevailed, retarding farm work and also growth and maturing of early truck. Wheat, rye, and oats, have obtained a good growth, but are lodged badly in many fields.—*E. W. McGann.*

New Mexico.—The mean temperature was 61.1° or 0.2° below normal; the highest was 105°, at San Marcial on the 11th, and the lowest, 27°, at Fort Wingate on the 2d. The average precipitation was 1.69, or 0.77 above normal; the greatest monthly amount, 5.92, occurred at Fort Union, while none fell at Gage, San Marcial, and Strauss, and only a trace at Deming, Engle, Fort Bayard, Lordsburg, Mesilla Park, Olio, and Silver City.

Unusually favorable month in northern and eastern sections, where the rainfall was excessive. Elsewhere the precipitation was lighter than usual, but the month as a whole not unfavorable.—*R. M. Hardinge.*

New York.—The mean temperature was 55.6°, or 0.4° below normal; the highest was 89°, at Jay on the 22d, and the lowest, 26°, at Bolivar on the 16th. The average precipitation was 5.13, or 1.13 above normal; the greatest monthly amount, 8.75, occurred at Mohonk Lake, and the least, 1.78, at Avon.

The first half of May was pleasant and generally favorable for farming interests. Cool, cloudy weather, with almost continuous rains, characterized the latter half of the month, delaying plowing and planting to a serious degree. Grass and winter grains made a luxuriant growth, and fruits, other than apples, promised well. No killing frosts occurred.—*E. T. Turner.*

North Carolina.—The mean temperature was 66.8°, or 0.2° below normal; the highest was 97°, at Southern Pines on the 3d and at Selma on the 4th, and the lowest, 32°, at Linville on the 4th and at Highlands on the 28th. The average precipitation was 7.94, or 3.76 above normal; the greatest monthly amount, 12.63, occurred at Marion, and the least, 3.99, at Hatteras.

The first decade of May was very favorable for farm work and for the growth of crops, but the remainder of the month was entirely too wet, and immense damage was caused by the floods from the 22d to 25th, during which time many rivers attained the highest stages ever known. Many fields of fine wheat were destroyed. Crops were generally poor and small and badly in need of cultivation at the close of the month.—*C. F. von Herrmann.*

North Dakota.—The mean temperature was 60.0°, or 8.7° above normal; the highest was 99°, at Berthold Agency and Medora on the 17th, and the lowest, 19°, at Napoleon and New England City on the 12th. The average precipitation was 0.31, or 2.11 below normal; the greatest monthly amount, 0.98, occurred at Fargo, and the least, trace, at Berthold Agency, Grafton, Melville, Steele, and Valley City.

The month was an unusually dry one, and at its close all vegetation that was above ground was suffering for moisture, while late sown grain had not sprouted. Grass was dying in all parts of the State, and prospects seemed very gloomy.—*B. H. Bronson.*

Ohio.—The mean temperature was 59.0°, or 1.8° below normal; the highest was 90°, at Portsmouth on the 24th, and the lowest, 26°, at Hillhouse on the 15th. The average precipitation was 3.96, or 0.38 above normal; the greatest monthly amount, 7.77, occurred at Bucyrus, and the least, 1.62, at Cincinnati.

The temperature for the month has been below normal. An extensive frost occurred on the 13th, the temperature falling to freezing or below at many central and northern stations. Slight damage to crops resulted, but the great bulk of the fruit crop escaped injury. The weather has been favorable for grain and grass crops, fairly good for potato and truck crops, but too cool and wet for corn.—*J. Warren Smith.*

Oklahoma and Indian Territories.—The mean temperature was 67.6°, or 1.4° below normal; the highest was 97°, at Lehigh, Healdton, and Ryan, Ind. T., on the 10th, and the lowest, 24°, at Kenton, Okla., on the 3d. The average precipitation was 5.39, or 0.68 above normal; the greatest monthly amount, 12.25, occurred at Mangum, Okla., and the least, 1.65, at Wagoner, Ind. T.

Generally fair weather, with cool nights, prevailed during the month. General and heavy rains occurred over the section from the 13th to the 18th and on the 30th and 31st, being excessive in some portions. Wheat, barley, and rye were heading and filling out well. Oats were badly damaged by insects and will be very short. Corn was in good condition and cotton was somewhat backward. Grass was good and stock thriving. A severe hailstorm did considerable damage in Canadian County. All vegetation in the path of the storm was almost totally destroyed. On the same day a severe storm passed over Custer County, wrecking several houses and causing severe damage to growing crops.—*Charles M. Strong.*

Oregon.—The mean temperature was 56.3°, or 1.3° above normal; the highest was 96°, at McMinnville on the 30th, and the lowest, 17°, at Silverlake on the 3d. The average precipitation was 2.03, or 0.66 below normal; the greatest monthly amount, 6.38, occurred at Bay City, and the least, 0.12, at Burns.

Crops in general made satisfactory growth during the month. Plowing and seeding were completed about the 15th instant, and at the close of the month fall wheat, rye, and barley had begun to head and spring grain, grasses, and hops were in excellent condition.—*Edward A. Beals.*

Pennsylvania.—The mean temperature was 58.9°, or 0.7° below normal; the highest was 91°, at York on the 24th, and the lowest, 28°, at Smethport on the 16th. The average precipitation was 5.56, or 0.69 above normal; the greatest monthly amount, 7.96, occurred at Hamlington, and the least, 2.24, at Erie.

Weather of May was generally favorable for agricultural interests. The heaviest rainfalls were reported over the northeast and southwest

sections; in some places the total fall was nearly 8.00 inches, but the average for the State was less than 1.00 inch above the normal. During the last week in the month frequency of rains interfered somewhat with planting of crops, besides checking germination. Temperatures were mostly seasonable; some cool weather in the middle of the month and some few noticeably warm days in the latter half. No damaging frosts occurred. Winter grain and grass made splendid growth during entire month. Wheat and rye are especially heavy in straw, and good yields are generally expected. Excepting apples and cherries, fruit prospects are very good.—*T. F. Townsend.*

Porto Rico.—The mean temperature was 79.3°, or 1.1° above normal; the highest was 97°, at Hacienda Coloso on the 4th, San German on the 21st, 29th, and 30th, and at Canovanas on the 26th, and the lowest, 57°, at Ponce on the 23d. The average precipitation was 9.41, or 0.48 above normal; the greatest monthly amount, 23.05, occurred at Isolina, and the least, 1.35, at Ponce.

The wet weather over north and central portions retarded farming operations, but, as a rule, farm work was well advanced at the close of the month. Some places, especially over the southern portion of the district of Ponce, drought prevailed. Some sugar cane was planted. The showers were exceptionally favorable for young canes. Grinding was slightly retarded in some sections by the continued rains. The yield of cane is not as good as was anticipated, and rains have caused a slight decrease in the grade of juice. The weather has been very favorable for coffee. A few new coffee plantations have been started, and weather for planting was all that could be desired. Some coffee on lowland in the Mayaguez district was about ready for gathering at the close of month.—*Joseph L. Oline.*

South Carolina.—The mean temperature was 71.4°, or 0.3° below normal; the highest was 99°, at Gillisonville and Temperance on the 3d, and the lowest, 40°, at Greenwood on the 28th. The average precipitation was 7.31, or 4.03 above normal; the greatest monthly amount, 13.08, occurred at Winthrop College, and the least, 2.17, at Beaufort.

The meteorological conditions throughout the month were unfavorable to field crops. Early in the month the ground was too dry to germinate seed, and poor stands of cotton, corn, and other crops were secured. The latter portion was overabundantly supplied with moisture to the physical injury of lands and crops, but seed that had lain dormant now sprouted rapidly and perfect stands were the rule. The latter portion was too cool for cotton.—*J. W. Bauer.*

South Dakota.—The mean temperature was 60.5°, or 3.0° above normal; the highest was 98°, at Ashcroft on the 17th, and the lowest, 20°, at Ashcroft on the 11th. The average precipitation was 1.77, or 0.96 below normal; the greatest monthly amount, 3.64, occurred at Centerville and Sisseton Agency, and the least, 0.18, at Interior.

Frost over the eastern portion of the State on the 12th and 25th injured early corn and potatoes, and fruit bloom, principally of plums, was considerably damaged, materially reducing the prospect for a crop. Corn and potatoes, however, generally recovered promptly and made fairly good progress during the latter part of the month. Drought injured some spring wheat, oats, and barley, retarded the growth of grass, and delayed germination of late sown grains in some parts of the middle and upper Missouri Valley. Generally the weather was favorable for spring wheat, oats, and spring and winter rye. Grass generally afforded good pasturage and at the close of the month the prospect for hay was good.—*S. W. Glenn.*

Tennessee.—The mean temperature was 65.1°, or 2.2° below normal; the highest was 93°, at Johnsonville and Springfield on the 2d, Liberty on the 3d and 4th, and at Covington on the 25th, and the lowest, 34°, at Rugby on the 30th. The average precipitation was 3.90, or 0.26 above normal; the greatest monthly amount, 8.60, occurred at Benton, and the least, 1.30, at Union City.

The weather was dry and unfavorable for the germination of seeds and growth of plants from the 1st to 17th, after which time there was abundant moisture, but unseasonably low temperature. Crops generally made unsatisfactory progress; there was much replanting to be done on account of poor stands, and in many bottom lands on account of overflows and drowning of plants. Local hailstorms were frequent and unusually disastrous during the second half of the month. Tobacco plants were mostly set out the last week of the month and under favorable conditions.—*Roscoe Nunn.*

Texas.—The mean temperature was 73.5°, or 0.8° below normal; the highest was 102°, at Fort McIntosh on the 11th, and the lowest, 41°, at Amarillo on the 26th. The average precipitation was 3.42, or 0.07 be-

low normal; the greatest monthly amount, 12.97, occurred at Wichita Falls, while none fell at Valentine.

Cotton planting was completed early in the month. The plant, while healthy, is growing slowly, and on account of so much replanting is very irregular. The crop is generally about two weeks late. Early cotton in the southern portion of the State is fruiting. Corn has been greatly improved, is in roasting ear over the southern portion, and is tasseling and silking over the central portion of the State. The acreage seeded to rice is much larger than was anticipated. Sugar cane is doing well, but more rain would improve the crop. The fruit crop is good; peaches and plums are being marketed.—*I. M. Oline.*

Utah.—The mean temperature was 59.3°, or 2.7° above normal; the highest was 98°, at Hite on the 17th, and at Green River on the 19th, and the lowest, 15°, at Loa on the 4th. The average precipitation was 1.29, or 0.16 above normal; the greatest monthly amount, 4.77, occurred at Farmington, and the least, trace, at Emery and Smithville.

Remarkably heavy rainfall occurred over Davis, Salt Lake, the northern portion of Utah, and the eastern portion of Tooele counties from the 2d to the 4th. Farmington received 4.61 and Salt Lake City 4.08 inches. The amount which fell at Salt Lake City greatly exceeds the precipitation of any other storm shown by the records of that station.—*L. H. Murdock.*

Virginia.—The mean temperature was 63.1°, or 1.5° below normal; the highest was 95°, at Buckingham on the 1st, and the lowest, 32°, at Cliftonforge on the 6th. The average precipitation was 5.49, or 1.38 above normal; the greatest monthly amount, 10.32, occurred at Grahams Forge, and the least, 2.20, at Alexandria.

The weather of the month was, in the main, favorable for crop progress, though toward its latter part a period of cool, rainy weather set in, which checked growth of vegetation and interrupted farm work. Many washing rains occurred, doing considerable damage to corn, wheat, and tobacco, and producing flood rises in all the streams of the State.—*Edward A. Evans.*

Washington.—The mean temperature was 55.3°, or 0.5° above normal; the highest was 99°, at Lind on the 26th, and the lowest, 24°, at Republic on the 10th. The average precipitation was 2.18, or 0.24 below normal; the greatest monthly amount, 10.06, occurred at Neah Bay, and the least, 0.35, at Lyle.

There was too little sunshine and too many cool and frosty nights for rapid growth, but the staple crops made fair progress, and at the end of the month the winter and spring wheat crops were in promising condition.—*G. N. Salisbury.*

West Virginia.—The mean temperature was 61.8°, or 1.1° below normal; the highest was 96°, at Beverly on the 24th, and the lowest, 21°, at Philippi on the 4th. The average precipitation was 6.15, or 1.94 above normal; the greatest monthly amount, 8.88, occurred at Oceana, and the least, 2.50, at Parsons.

Cool, rainy weather retarded farm work and checked the growth of vegetation, yet at the close of the month wheat and rye were in nearly average condition, and meadows promised a fairly good yield; corn planting and oat sowing were about completed, and plowing nearly up to date; oats and corn made slow growth on account of the cool nights; the prospect for a large crop of all kinds of fruit was exceptionally favorable.—*E. C. Voss.*

Wisconsin.—The mean temperature was 55.9°, or 0.9° above normal; the highest was 98°, at Medford on the 17th, and the lowest, 21°, at Spooner on the 25th. The average precipitation was 2.29, or 1.51 below normal; the greatest monthly amount, 4.20, occurred at Wausau, and the least, 0.48, at Ladysmith.

The month as a whole was rather less favorable for growing crops than usual, both on account of the general, and in some sections, serious deficiency of moisture and the prevailing northeast winds. Corn planting was practically completed by the end of the month, but germination was slow, and the early plantings where up presented a yellowish, unhealthy appearance. The growth of grass and pastures was retarded by the dry weather.—*W. M. Wilson.*

Wyoming.—The mean temperature was 55.6°, or 4.1° above normal; the highest was 97°, at Alcoma on the 18th, and the lowest, 23°, at Daniel on the 1st. The average precipitation was 2.55, or 0.60 above normal; the greatest monthly amount, 4.81, occurred at Griggs, and the least, 0.96, at Daniel.

The abundant and well distributed rainfall of the month put the ranges in the best condition they have been in for several years, and have assured an excellent crop of native hay.—*W. S. Palmer.*